

TAC Expert Panelists

Rufus Chaney, PhD -- *Research Agronomist*
USDA, Beltsville, MD

Willard Chappell, PhD -- *Professor of Physics*
U. Colorado, Denver, CO

Paul Hammond, DVM, PhD -- *Heavy Metal Toxicologist*
U. Cincinnati, Cincinnati, OH

Mary Ellen Mortensen, MD -- *Pediatrician, public health*
Poison Control Center, Columbus, OH

Alice Stark, MD -- *Epidemiologist, public health*
NY State Dept. Health, Albany, NY

Iain Thornton, PhD -- *Environmental geochemist*
U. London, London, England

Advisors

- **Robert Bornschein, PhD; U. Cincinnati - *Epidemiologist***
- **Andy Davis, PhD; PTI Environ. Serv. - *Geochemist***
- **John Drexler, PhD; U. Colorado - *Geochemist***

Presenters During Initial EPA Session

Gerry Henningsen, DVM, PhD, DABT/DABVT
US EPA, Denver, CO
-- New site toxicologist

John Drexler, PhD
Dept. Geological Sciences
U. Colorado, Boulder, CO
-- Aspen soil morphology and speciation

Gina Terraccianno, DO, MPH
ATSDR, Atlanta, GA
-- Aspen blood lead study director

Jeff Lybarger, MD, MS
Director, Division of Human Health Services
ATSDR, Atlanta, GA
-- Blood lead studies in general

Christopher Wels, PhD
US EPA, Denver, CO
-- Previous site toxicologist: history, bioavailability

Brian Pinkowski, RPM (remedial project manager)
US EPA, Denver, CO

TAC Questions

1. Does the existing **site-specific data** and **scientific literature** provide adequate evidence which confirms that the soil lead in the Smuggler Mountain Superfund Site poses a **current realistic health threat** (i.e., unacceptable risk of disease or impairment) to **any** of the residents on or near the site?
 - a) **If yes**, what is the **primary evidence** and **main scientific rationale** to attribute a current and realistic health threat to soil lead on the site?
 - b) Also, what is considered to comprise this **health threat** (spectrum and likelihoods of potential risks) stemming from exposure to soil lead?
2. If the answer to question 1 above is **no**, is there a reasonable probability of such a threat developing in the future?
 - a) **If yes**, please provide information as outlined in parts a & b of question number 1 above.
 - b) **If no**, summarize the evidence and rationale to support a conclusion of **neither a current or future health threat** based on current information.
3. Having made this health threat assessment, what is the TAC's recommended **public health action**, if any, in order to protect the current and future health of residents from the soil lead effects?

General Terminology

<u>Toxic:</u>	a property of a chemical to cause biological harm
<u>Toxicity:</u>	the potency and extent of the toxic effect (often expressed as ppm or mg/kg related to an effect)
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<u>Exposure:</u>	the amount (concentration + duration) of a substance that an individual contacts from an environmental source
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<u>Health Threat:</u>	a hazard which endangers health to some unacceptable degree (often set by society/regulations)
<u>Bioavailability:</u>	the amount and rate of a substance taken up by the body and transferred to a target tissue
<u>Risk Assessment:</u>	determining a calculated risk to health associated with hazardous situations involving chemicals
<u>Risk Management:</u>	taking appropriate regulatory action in attempts to reduce excessive risks to acceptable levels

TECHNICAL ADVISORY COMMITTEE MEETING

SMUGGLER MOUNTAIN SUPERFUND SITE
ASPEN, COLORADO

MEETING SCHEDULE:

Tuesday and Wednesday - October 27 & 28, 1992
Thursday October 29th if needed

MEETING PLACE:

The Mountain Chalet
333 East Durant
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Telephone 303 925-7797

October 26, 1992

TAC travel day to Aspen

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This entire day will be closed to the general public and media with noted exceptions.

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October 29th

Third day of deliberation or travel day.

October 30th

TAC travel day

BRIEF HISTORIC OVERVIEW OF THE SMUGGLER MOUNTAIN SUPERFUND SITE

October 27, 1992

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* 1984 - Smuggler Mountain (Site) was proposed for listing on the National Priorities List (NPL) by EPA as the result of their previous studies. Using the Hazard Ranking Score (HRS) system, the Site was evaluated using the above mentioned parameters. A study area map was developed.

There were two "operable units" (OU) defined within the Site. OU-1 consisted of approximately 75 acres, primarily the residential areas at the base of Smuggler Mountain. OU-2 was approximately 35 acres, exclusively containing the Smuggler Mine and surrounding mine property.

The Aspen community initiated a challenge to the EPA Hazard Ranking Score assigned to the Site. The main concern was that the Site had been scored using incomplete, incorrect or inaccurate data.

* 1986 - EPA determined the area qualified under CERCLA as a superfund site and Smuggler was officially listed on the NPL.

A Potentially Responsible Party (PRP) list was developed by EPA. The list included private individuals, businesses and Pitkin County.

The clean up "action level" of the lead in the soils was determined to be 1,000 parts per million (ppm) by the EPA.

A Record of Decision (ROD) was issued which outlined the remedy selection process. The OU-1 remedy was to develop an on-site repository to dispose of all lead containing soils over 5,000 ppm excavated from the Site. Excavation would have been to a 4 foot depth anywhere lead exceeded 5,000 ppm. In areas where soil contained between 1,000-5,000 ppm lead, capping in place with 6-12 inches of clean soil and revegetating was required. No action was necessary in areas where lead levels were less than 1,000 ppm.

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Institutional controls which would insure the integrity of the remedy would be developed by local government.

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As stated in the ESD: "the top two feet of soils/tailings in any area with lead concentrations greater than 1,000 ppm will be excavated." The "action level" remained at 1,000 ppm.

Institutional controls were also required under this plan.

EPA initiated a lawsuit against the PRP's for cost recovery of expenses accumulated by the federal government during the investigation phases. The lawsuit was stayed pending negotiated settlements between impacted parties.

* 1990 - The second ESD was issued which redefined the remedy. This was initiated by citizens who were concerned by the amount of excavation and disruption to the community that would occur with the 1989 remedy.

Remedy changes in this ESD for soils containing greater than 1,000 ppm lead were stated as: "A geo-textile liner covered with 1 foot of clean fill and topsoil (settled and compacted) and vegetative cover to minimize erosion is required for all areas not paved or covered by permanent structure." Further, driving areas not paved would be paved to prevent direct contact with soils.

Institutional controls would be required under this scenario as previously stated, but with tighter standards due to the lessened amount of soil being excavated. A 1 foot cover would require more local government control through a permitting process to ensure the shallower cover would be maintained.

The estimated remediation cost of OU-1 was established at between \$10-12 million dollars.

Pitkin County and the City of Aspen were finalizing a negotiated settlement with EPA which would allow the remedy to occur. (Note: In 1983, the vast majority of the Site was in the County. As years past, the City annexed all but a small portion of the Site. Therefore, both governments were involved).

New scientific and medical data was published which raised question as to the true health risk to the residents living on the Site. Previously presented EPA modelled data which predicted health risk was called into question by the community.

Pitkin County repealed settlement ordinances between local government, EPA and the State of Colorado. This action was taken because it was the desire of elected officials and citizens to more

SMUGGLER MOUNTAIN
TECHNICAL ADVISORY COMMITTEE
EXECUTIVE SUMMARY
OCTOBER 28, 1992

The Technical Advisory Committee (TAC) wishes to express its appreciation to EPA and the citizens of Aspen for their assistance and generous hospitality during the Committee's deliberations.

It is easy to criticize regulatory agencies for whatever position they take on issues such as the Smuggler Mountain situation. But, in many cases decisions must be made in spite of uncertainties. The issue the TAC has been wrestling with is not new to the members of the Committee.

In the past ten years there has been progress in the scientific understanding of lead and human health. Studies have documented the existence of subtle, subclinical, but important health effects in children at very low blood lead levels. There are disagreements in the scientific community about precisely what is the minimal blood lead level of concern. There is, however, general agreement about the relationship between neurobehavioral and other adverse health effects and blood lead levels in children considerably below those once thought to be safe (CDC, 1985). Thus, the absence of clinically observed signs and symptoms of lead poisoning is not proof of the absence of adverse health effects of lead in young children.

At this time, the concentration of lead in whole blood is the best indicator of whether risk of a lead-related health effect exists. A blood lead survey was undertaken at the Smuggler Mountain Site in 1998. Unfortunately, this survey did not include sampling of soils, dusts and other potential lead sources in the yards and residences of the children who participated. The Committee believes that the soil concentrations obtained from a previous sampling have limited application in the interpretation of the blood lead data. However, the blood lead survey was well-planned, well-implemented and the analyses performed at the highly proficient Centers for Disease Control Laboratory. Therefore, the

TAC believes that these data are representative of the Site residents at that time.

There has been a considerable debate regarding why the blood lead concentrations were low (geometric mean = $2.6 \mu\text{g/dl}$) compared to the general population of young children. Much discussion has centered on the bioavailability of the lead-bearing materials with which the children at this Site might have contact. In spite of the reports, papers, and testimony regarding this issue, the Committee concludes that there are unresolved questions regarding bioavailability to young children of lead in these soil and mine wastes.

Studies of the relationship between soil ingestion by children and concentration of lead in their blood have shown that many physical, behavioral, and social factors can influence this pathway. In particular, intact soil cover, adult supervision, and good nutritional status can reduce soil ingestion and/or reduce lead absorption by children. The areas adjacent to the mobile homes, houses, and condominiums in the study Site appear to be well maintained. Characteristics of the community on this Site suggest that the children are likely to have good nutritional status. Recent estimates of soil/dust ingestion are in the range of 40 to 50 mg/day (median) in contrast to the 200 mg/day used in Superfund Risk Assessments. If these new ingestion rates are used, along with the Environmental Protection Agency's bioavailability assumptions, the childrens' blood lead concentrations that were observed would have been predicted.

The TAC will now respond to the questions posed. We emphasize that the answers are specific to the unique conditions at the Sanggler Mountain Site.

QUESTION No. 1: Does the existing site-specific data and scientific literature provide adequate evidence which confirms that the soil lead in the Smuggle Mountain Superfund Site poses a current realistic health threat (i.e., unacceptable risk of disease or impairment) to any of the residents on or near the Site?

ANSWER: The Committee unanimously concludes that the answer is no.

QUESTION No. 2: If the answer to question 1 above is no, is there a reasonable probability of such a threat developing in the future?

ANSWER: The Committee unanimously agrees that there is a possibility of a future threat, but the likelihood is small. If the demographics, land use and environmental conditions remain essentially unchanged at the Site, we do not anticipate any future health threat (risk).

QUESTION No. 3: Having made this health threat assessment, what is the TAC's recommended public health action, if any, in order to protect the current and future health of residents from the soil lead effects?

ANSWER: The Committee unanimously agrees that since there is a small possibility of future risk, the following recommendations are prudent:

1. A program of blood lead surveillance should be instituted for young children. At a minimum, the frequency of testing and interventions should be consistent with the program for children with low risk of high lead exposure as described on Page 93 in "Preventing Lead Poisoning in Young Children" (CDC, 1991).
2. Although the Committee unanimously agrees that there is no need for soil removal from the Site, the berm (the mound of waste material adjacent the mobile home park and the Smuggler

tennis courts) deserves special attention. Because of extreme contamination of the berm, it should be capped and covered with clean soil, then planted with appropriate vegetation. Monitoring should be instituted to ensure the integrity of the cap and actions taken, if necessary, to correct any breach of the integrity. As an interim measure, the surrounding fence should be extended to completely enclose the berm. Common-use areas, such as Molly Gibson Park, presently comprised of exposed mine waste, should be appropriately covered.

3. If owners wish to have vegetable gardens, these should be planted in raised beds with at least 12 inches of clean soil.
4. Soil testing should be made available upon request by residents.
5. Proposed changes in Site use should be reviewed by the City and County Health Departments to evaluate possible changes in soil exposure to young children.
6. If studies demonstrate that lead-bearing materials at this Site have or can be made to have very low bioavailability, the above recommendations should be reviewed and, perhaps, modified.

A final written report will be submitted in 45 days.

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